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HOLOGRAPHY

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ГОЛОГРАФІЯ

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Holography allows for the recording and reconstruction of spatially-dependent images. The holographic image is based on optical-material interference rather than sensors and programs; the information is enfolded within the surface rather than being applied onto it. We sense the difference by moving around, and returning to find the image again. The holographic image has its own presence, which we move through, playing the image with our own perception and agency.

A small but active group of artists still use holography as their main medium, and many more artists integrate holographic elements into their work.

Holography can be put to a variety of uses other than recording images. Holographic data storage is a technique that can store information at high density inside crystals or photopolymers. The ability to store large amounts of information in some kind of media is of great importance, as many electronic products incorporate storage devices.

There also exist holographic materials that do not need the developing process and can record a hologram in a very short time. This allows one to use holography to perform some simple operations in an all-optical way.

Holographic interferometry (HI) is a technique that enables static and dynamic displacements of objects with optically rough surfaces to be measured to optical interferometric precision (i.e. to fractions of a wavelength of light).

It can also be used to detect optical-path-length variations in transparent media, which enables, for example, fluid flow to be visualized and analyzed. It can also be used to generate contours representing the form of the surface.

The hologram keeps the information on the amplitude and phase of the field. Several holograms may keep information about the same distribution of light, emitted to various directions. The numerical analysis of such holograms allows one to emulate large numerical aperture, which, in turn, enables enhancement of the resolution of optical microscopy.

In addition to this, holograms can be used as a security element in identity cards. Security holograms are very difficult to forge, because they are replicated from a master hologram that requires expensive, specialized and technologically advanced equipment. They are used widely in many currencies.